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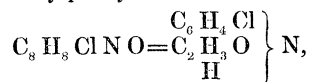
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tained from Dr. Hofmann's collection. There is only one point in which a slight difference was observed. Both compounds are capable of crystallizing either in needles or in well-defined octahedra, the former being generally obtained from water, and the latter from alcohol. The bromphenylamine, obtained from the acetyl-compound, appears to be more inclined to crystallize in needles than in octahedra. Circumstances have prevented me from entering into an examination of the products of decomposition of the two bromphenylamines; and the question whether these two bodies are really identical, or similarly related as the two nitro-compounds, must be decided by further experiments*.

Action of Chlorine on Acetylphenylamide.

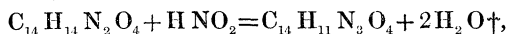
The phenomena observed in the action of chlorine on a cold saturated solution of the phenyl-compound are perfectly similar to those presented in the corresponding reaction with bromine. A crystalline compound immediately separates from the solution; as soon as the crystals cease to augment, the current of chlorine is interrupted. Washed with cold, and once recrystallized from boiling water, the chlorinated body is found to be nearly perfectly pure monochlorinated acetylphenylamide



which, when distilled with potash, furnishes abundance of chlorphenylamine, resembling in a marked manner the chlorphenylamine obtained by the action of potash upon chlorisatin.

VIII. "New Compounds produced by the substitution of Nitrogen for Hydrogen." By P. GRIESS. Communicated by Dr. HOFMANN. Received July 24, 1860.

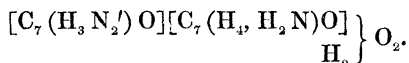
In several previous notes I have called attention to a peculiar double acid which is formed by the action of nitrous acid upon amidobenzoic acid,



* These experiments have since been made by Mr. P. Griess, whose results are given in the next abstract.—A. W. H.

† H=1; O=16; C=12, &c.

the constitution of which, as far as my experiments go, may be represented by the formula

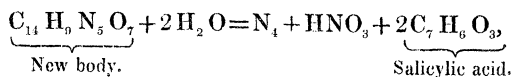


There are not less than three other compounds known which empirically may be represented by the same formula as amidobenzoic acid, viz. nitrotoluol, salicylamide, and anthranilic acid. The two former substances differ from amidobenzoic acid both physically and chemically in a marked manner; anthranilic acid, on the other hand, is so closely allied to the benzoic derivative, that special experiments were required to distinguish these two bodies. Gerland, when he submitted the two acids to Piria's well-known reaction, observed that both are converted by nitrous acid into non-nitrogenated acids, which, although still isomeric, essentially differ in their properties; amidobenzoic acid being transformed into a new acid,—oxybenzoic acid, whilst anthranilic acid yields salicylic acid.

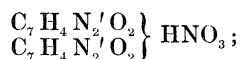
It appeared of some interest to try whether the substitution of nitrogen for hydrogen in anthranilic acid would furnish a compound isomeric with the double acid obtained from amidobenzoic acid. A current of nitrous acid, when passed into a cold alcoholic solution of anthranilic acid, rapidly transforms this substance into a compound crystallizing in white prisms, which is easily obtained by allowing the alcohol to evaporate at the common temperature. The new body is extremely soluble in water, insoluble in ether. By analysis it was proved to contain



The new compound is thus seen to be far from isomeric with the derivative of amidobenzoic acid produced under similar circumstances, with which, in fact, it shows no analogy whatever. I have not yet arrived at a definite view regarding the molecular construction of this body; nevertheless its deportment with water shows even now that the nitrogen in it exists in two different forms. Gently heated with water, the new compound disengages torrents of nitrogen; on cooling, the liquid solidifies into a crystalline mass of salicylic acid, free nitric acid remaining in solution. This metamorphosis is represented by the equation



which has been controlled by quantitative experiments. The idea suggests itself to assume one-fifth of the nitrogen in the form of nitric acid, when the new body might be viewed as a salt-like compound of the formula



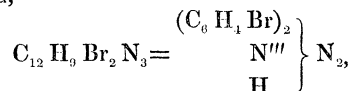
the action of the water consisting simply in the replacement of the monatomic nitrogen by the elements of water, which would produce salicylic acid, nitric acid being liberated.

I avail myself of this opportunity of mentioning the deportment of several other isomeric bodies under the influence of nitrous acid. There are two basic compounds,



known ; the one is the alphaphenylamine of Hofmann and Muspratt, the other the betaphenylamine observed by Arppe. When submitted to the action of nitrous acid, these two isomeric bodies yield two perfectly different nitrogen-substituted derivatives. The substance obtained from alphaphenylamine (the base formed by the reduction of dinitrobenzol) has been already mentioned in one of my previous notes, the body derived from betaphenylamine is still under examination.

The action of nitrous acid proves that there are also two bromphenylamines similar to the two nitrophenylamines. The original bromphenylamine discovered by Hofmann, and which is formed by the distillation of bromisatin with hydrated potash, yields with nitrous acid a compound,



crystallizing in beautiful golden-yellow needles, insoluble in water, and difficultly soluble in alcohol and ether. The bromphenylamine, on the other hand, which was lately prepared by Mills* from acetyl-bromphenylamide, exhibits with nitrous acid a perfectly different deportment, being transformed into a yellow scarcely crystalline compound, easily soluble in alcohol and ether, but insoluble in water. I have not as yet analysed this compound ; its formation, however,

* See the previous abstract.

and its properties render it probable that it will be found to be isomeric with the product of decomposition previously mentioned. I am engaged in a more minute examination of this compound, which I hope may assist in explaining the cause of the still enigmatical isomerism exhibited by the derivatives of phenylamine.

I have already repeatedly called attention to the different atomicity exhibited by nitrogen under different conditions. In the derivatives of amidobenzoic and of anthranilic acids, it can be proved that 1 equiv. of nitrogen replaces 1 equiv. of hydrogen; while in the derivatives of phenylamine, the nitrogen is present with the value of three molecules of hydrogen.

The experiments which I have described were performed in Dr. Hofmann's laboratory.

IX. "Contributions towards the History of the Monamines."—

No. III. Compound Ammonias by Inverse Substitution.

By A. W. HOFMANN, LL.D., F.R.S., &c. Received July 24, 1860.

Many years ago I showed that the bromide or iodide of a quartary ammonium splits under the influence of heat into the bromide or iodide of an alcohol-radical on the one hand, and a tertiary monamine on the other.

Having lately returned to the study of this class of substances, I was led to examine the deportment, under the influence of heat, of the tertiary, secondary, and, lastly, of the primary monammonium-salts.

Experiment has shown that these substances undergo an analogous decomposition. The chloride of a tertiary monammonium when submitted to distillation yields, together with the chloride of an alcohol-radical, a secondary monamine; the chloride of a secondary monammonium, together with an alcohol-chloride, a primary monamine; lastly, the chloride of a primary monammonium, the chloride of an alcohol-radical and ammonia.

Exactly, then, as my former experiments show that we may rise in the scale by replacing the four equivalents of hydrogen in ammonium one by one by radicals, so it is obvious from these new experiments